

## Lecture 1

### **Definition of statistics**

It is a science dealing with the collection, analysis, interpretation, and presentation of data.

### **Definition of data**

It is a set of information either numeric or nonnumeric collected from individuals (or units)

### **Data collection**

The process of gathering data that are going to be used in analysis.

### **Sources of data**

#### **1- Primary data**

Data observed or collected directly from first-hand experience.(data collected by us through a survey).

#### **2- Secondary data**

Published data and the data collected in the past or other parties .

*Examples: data from Internet , World bank , United nation, UNISCO, Human development report and CAPMAS.*

#### **Steps of collecting primary data**

- Define the purpose of the survey
- Define the population according to the purpose defined
- Collecting the data either from the whole population or from a sample .

### **Population**

All the units about which we want to collect data

Examples:

- a. if we are interested in the students of a certain school, the population would be all of the students of this school
- b. If we are interested in the production of a specific type of machine, the population would be all the machines of this type .

## **Sample**

A subgroup of the population (usually used when it is hard to reach all the units of the population).

Examples:

- a. students in 5 classes only in a school
- b. 20 machines chosen from all of the machines

## **Methods of selecting sample**

- **Randomly**

In which each unit in the population have the same chance to be chosen and the sample in this case is called a random sample

Example: if we are doing a study about the first year students in the faculty of commerce. in order to choose a random sample, we get all the names of them and randomly choose a number of students which represent the sample.

- **By Control**

In which not all the units of the population have the same chance to be chosen in this case the sample called a control sample.

Example: To interview just the ones that I meet in the faculty who are in the first year.

## **Pretest**

It is a test performed in order to be sure about the validity of the questionnaire (ex: whether all the questions are clear and understandable, whether all the needed data are collected ).

The pretest it is usually tested on a certain type of the population ( not the population defined for the main purpose of the survey).

## **Phone survey**

It is a survey done through the telephone using a random dialing method

***Advantages:*** less time, less effort, less cost

***Disadvantage:*** Many people don't have publicly-listed telephone numbers. Some don't have telephones. People often don't like the intrusion of a call to their homes. And, telephone interviews have to be relatively short or people will feel bored.